

R07

Code: R7310105

III B. Tech I Semester (R07) Supplementary Examinations, May 2012

STRUCTURAL ANALYSIS - II

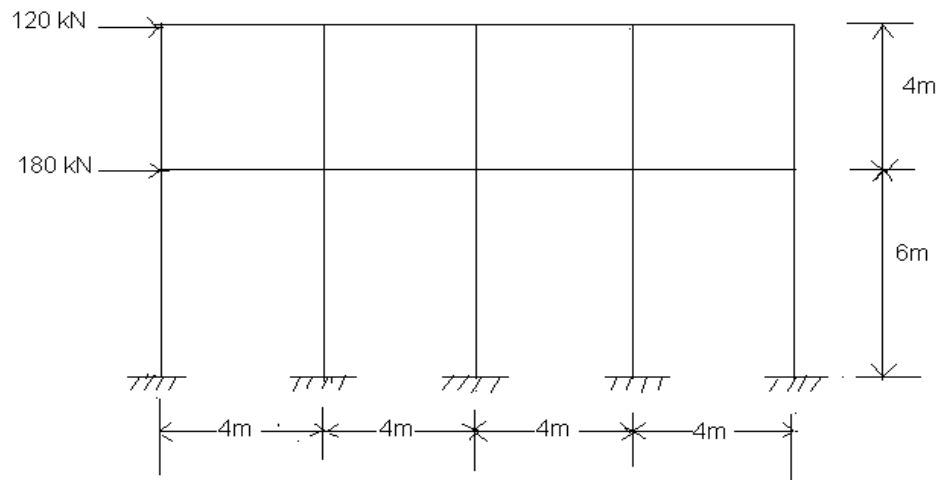
(Civil Engineering)

Time: 3 hours

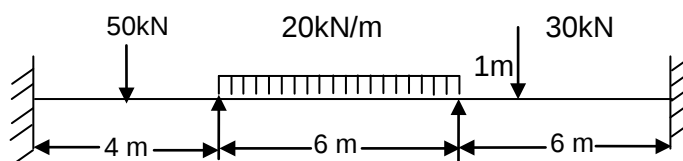
Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

- 1 A parabolic arch hinged at the springing and crown has a span of 20 m. The central rise of the arch is 4 m. It is loaded with a uniformly distributed load of intensity 2kN/m on the left 3 m length. Calculate: (a) The direction and magnitude of reactions at the hinges. (b) The bending moment, normal thrust and shears at 4m and 15m from the left end.
- 2 A two hinged semicircular arch of uniform EI and of radius R supported at the same level carries a distributed vertical load linearly varying from zero at left end to the w/unit run at the right end. Obtain the reaction components at the right end. Hence compute the bending moment, the normal thrust, and radial shear at the left quarter span section.
- 3 State the assumptions made in cantilever method of frame analysis. Analyze the frame shown below by cantilever method and draw the bending moment diagram. Assume that interior columns are having cross sectional area thrice than that of exterior columns.



- 4 ABC is a continuous beam with EI constant throughout its length. The end supports A and C are fixed and the beam is continuous over the middle support B. Span BC is uniformly loaded with 10kN/m length while a concentrated downward load of 100kN at the mid span of AB. Calculate the moments by slope deflection method.
- 5 Evaluate the bending moment and shear force diagrams of beam in figure 17, by moment distribution method.

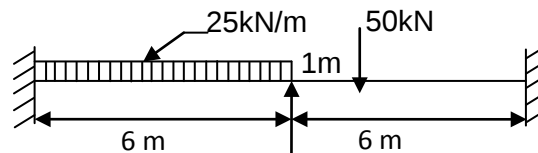


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Code: R7310105

Page 2

- 6 (a) Explain Kani's method of solving a frame subjected to sway forces.
(b) Evaluate the bending moment and shear force diagrams of a beam in figure by the Kani's method.



- 7 (a) Distinguish between the flexibility and stiffness methods of analysis of structures.
(b) Explain the substitute frame method of analysis for a multistoried frame for obtaining the maximum bending moment in a particular beam or a column.
- 8 Using stiffness method find the support moments for the two-span continuous beam loaded as shown in figure, and sketch the B.M. and S.F.D. ($EI = \text{constant}$).

